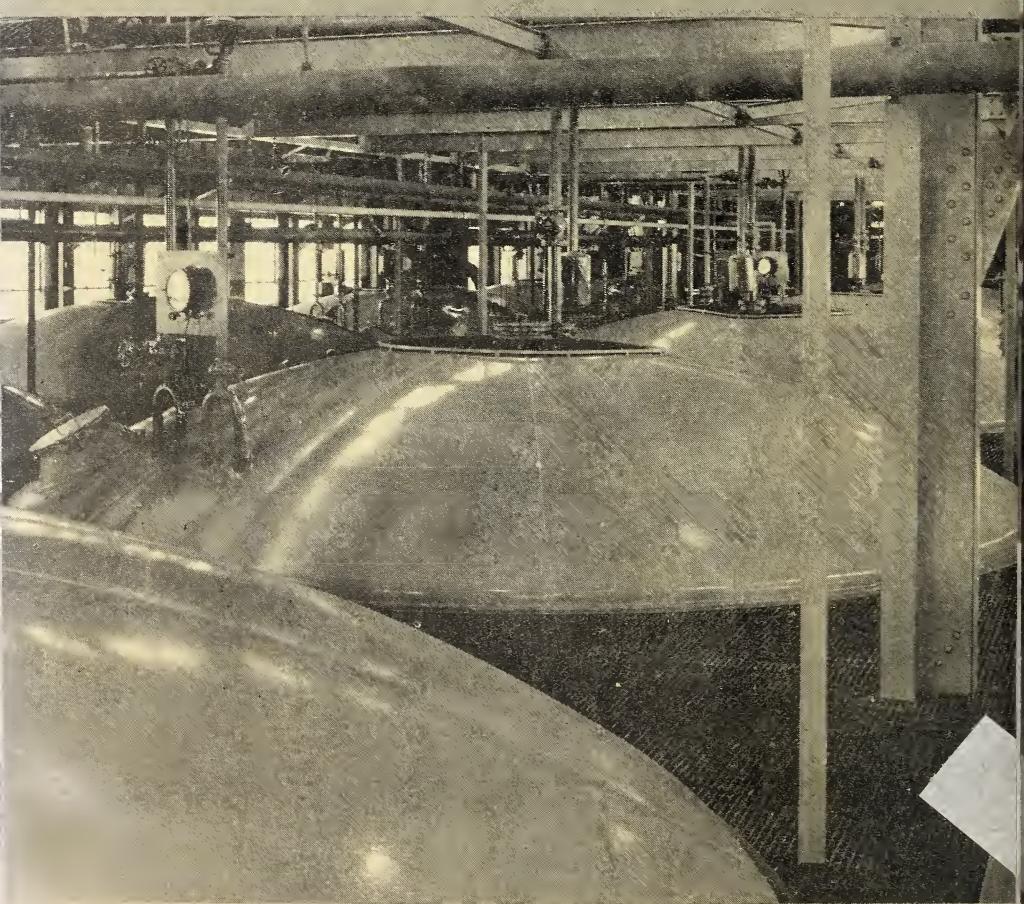
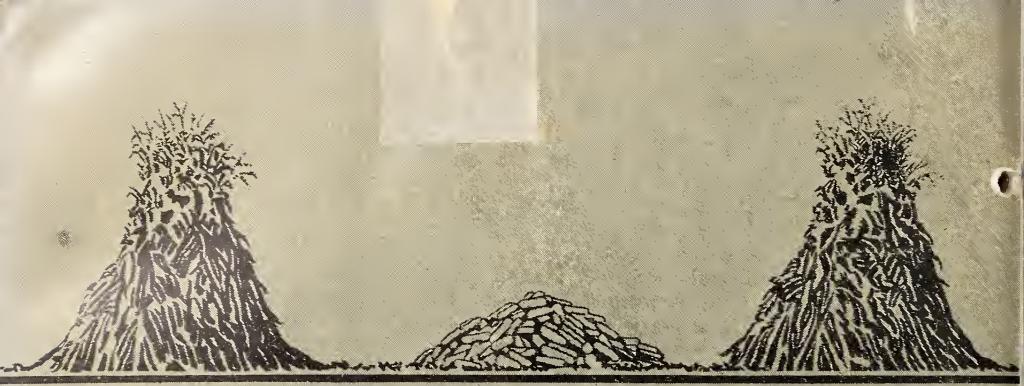
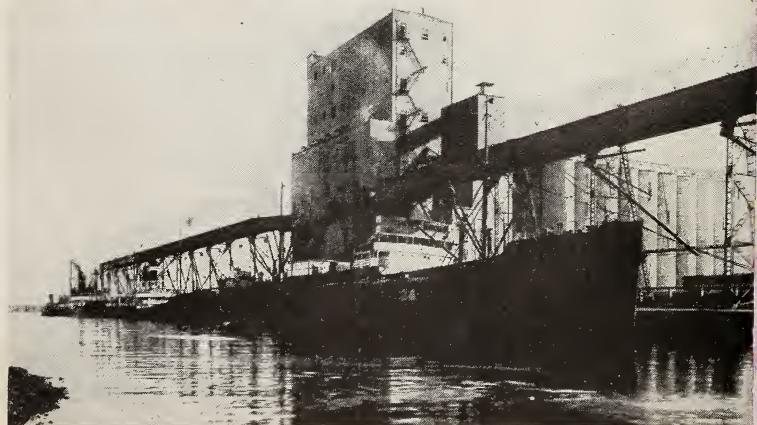
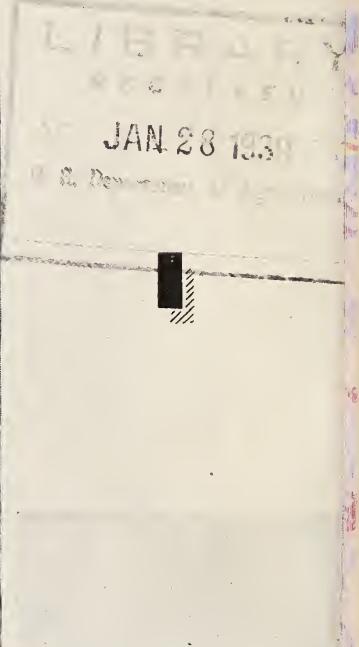


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The **SERVICE** of Federal Grain Standards



MISCELLANEOUS PUBLICATION No. 328
U. S. DEPARTMENT OF AGRICULTURE

FROM THE 1880's down to the World War the story of grain marketing was one of growing chaos in respect to grades and inspection. The system was very hard on the farmer. It also led finally to serious complaints from foreign buyers.

The United States Grain Standards Act was passed by Congress August 11, 1916. Its purpose was to set up a system of uniform grading under Federal supervision.

Under this act the United States Department of Agriculture established official standards which are now in force for wheat, corn, barley, rye, oats, Feed Oats, Mixed Feed Oats, grain sorghums, flaxseed, and Mixed Grain.

The Federal grading system applies to grain sold and shipped by grade in interstate or foreign commerce. Practically all grain received at the terminal markets is graded and warehoused according to the Federal grain standards.

Any interested party, if dissatisfied with the grade assigned to a given lot of grain by a licensed inspector, can appeal to the Secretary of Agriculture for a review.

Among the benefits of this system are: It supplies a common language of trading; grades and inspection are uniform and dependable; it fosters confidence and good will in domestic and foreign markets; it facilitates bidding and clearance in the channels of trade; it minimizes one of the chief causes of disputes; it makes the basis for accurate market reports; it facilitates storage and credit transactions; it is absolutely essential to the modern system of buying for future delivery; it has increased prices paid to the grower.

THE SERVICE OF FEDERAL GRAIN STANDARDS

By the Bureau of Agricultural Economics

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EARLY GRAIN MARKETING AND INSPECTION

WHEN THE FIRST SETTLERS began growing wheat in the Hudson and other eastern valleys, there were no problems of grain standardization, futures trading, nor export markets. Wheat was bartered for articles needed, was loaded on boats, and sent down the rivers to the coast towns where it was sold to the mills and ground at once for local use. As the tide of settlement rolled westward through the Ohio Valley and finally over the Plains beyond the Mississippi, there emerged a vast output of grain grown a long distance from the centers of consumption. Gradually the capacity of the prairies gave the country a great surplus of wheat to sell in foreign markets.

The growth of this huge trade in grain bought, sold, and moved over long distances, stored over long periods, and with much of it shipped overseas, brought problems that had not existed in the days of nearby wheat fields and simple barter. Grain necessarily came to pass through many hands. It necessarily came to be contracted for, for future delivery. Parcels of grain were bargained for by men

thousands of miles distant from the fields and not seen by the buyers perhaps until weeks later.

A common language of trade had to be built up. There were wide differences in the quality of grain, and naturally these differences entered into its value on the markets. Buyers and sellers had to agree on definitions that could be written into contracts or cable messages.

In the early days grain was sold by sample or the buyer looked it over personally, when possible. When the buyers could not see the grain beforehand, dealers developed the custom of submitting a sample or of signing a statement as to its general quality and condition.

This practice of individual dealers issuing their own written statements of grain quality did not prove very satisfactory, however, and in time the matter was taken over by chambers of commerce and boards of trade. These organizations adopted a system of grading and employed inspectors to grade the grain either when arriving at market or at time of shipment. Grain was first graded in the United States in 1857 by inspectors employed by the Chicago Board of Trade.

As the trade in grain grew and became of paramount importance in the surplus-producing States, the grading and inspection work eventually was taken over by several of the State governments. This was done first in Illinois in 1871. Between 1871 and 1916 nine States established grain-inspection departments.

The story of grain marketing in those years from the 1880's down to the World War was one of ever-mounting difficulties with grain inspection. Each market had its own grades or methods for interpreting grades and sometimes the certificate of grade issued in one market was not recognized in another.

The specifications of the various grades differed in the States and the markets, and often were indefinite. For instance, some standards required that No. 2 corn be dry, others reasonably dry; one would require not more than 16 percent moisture, another perhaps not more than 15.5 percent; some one weight per bushel, some another. No. 3 oats alone were described or designated under more than 30 different specifications, and the test-weight-per-bushel requirements for this grade varied from 22 to 29 pounds per bushel.

FORMER COMMERCIAL HAZARDS CAUSED BY NONUNIFORM STANDARDS

The confusion of grades was only one element in a generally chaotic grain-marketing situation. It led to an intricate tangle of trading maneuvers through which each market sought to build up its own advantage.

Grade specifications were interpreted largely according to circumstances of the moment. As there was no central authority, unscrupulous dealers could at times demoralize the whole trade.

The dilution of shipments by admixture of cheaper grain was common—barley with oats, rye with hard red winter wheat, unsound wheat with sound wheat, etc. When the grower sent his grain to market, he had little idea what grade would be assigned to it. When a buyer bargained for grain, he could not be sure what quality he was actually going to receive. Buyers both here and abroad had little confidence in the certificates that were issued by some of the grain-inspection departments.

Grain of "contract grade" at one market might be and often was graded differently at another market, thus throwing added difficulties in the way of fulfilling contracts. Durum wheat, graded as such in the State where grown, might be changed even as to name—called macaroni wheat—when it reached a seaport. Wheat destined for export was often given a grade far above its actual quality. Local elevators, and for that matter all kinds of buyers, frequently took advantage of farmers by lowering the grade when buying grain, expecting then to sell it as of a better grade and so add to their profit. Wheat received from country points frequently was given lower grade designations in early fall than the same kind of wheat was later on. This sometimes worked to the disadvantage of a considerable part of the crop that was sold early.

The upshot was that this loose, confused, unregulated grading system imposed a huge burden of hazards upon the grain trade. Traders strove to protect themselves against these hazards by taking wide margins of profit wherever possible.

The farmer was penalized by this whole system. The toll taken all along the line from the foreign market way back to the country elevator tended to cut down the farmer's price. It was a common grievance that terminal market prices were not well reflected back at the country shipping points.

COMPLAINTS FROM FOREIGN BUYERS

The widespread agitation against this chaotic state of things was brought to a head finally by complaints from foreign markets. These complaints began to be formidable about 1898. British and French interests and later on numerous European trade organizations, grain dealers, millers' organizations, and individual importers began to protest over the unreliability of American grain-merchandising practices.

By 1906 the certificates from certain American markets were absolutely refused abroad and export trade was in serious jeopardy. A



BAE 33474

Figure 1.—A large grain-inspection laboratory under Federal supervision. Similar laboratories are located at the important grain markets.

series of complaints from European countries was lodged with our State Department. This situation went from bad to worse for some years. The American grain trade itself actively sought means of improving the conditions; attempts were made to establish uniform grades and inspection, but it was found impossible to control the selfish practices of individual dealers and markets.

THE UNITED STATES GRAIN STANDARDS ACT

This chapter of grain trade history culminated finally in a widespread public demand for Federal control of grain inspection. The demand was met by the passage by Congress of the United States Grain Standards Act, August 11, 1916. This act gave the Federal Government authority to establish uniform standards which shall apply to all grain sold or shipped by grade in interstate and foreign commerce from or to an inspection point; also to establish a supervisory organization to oversee the application of the standards.

The law now is administered by the Bureau of Agricultural Economics of the United States Department of Agriculture.

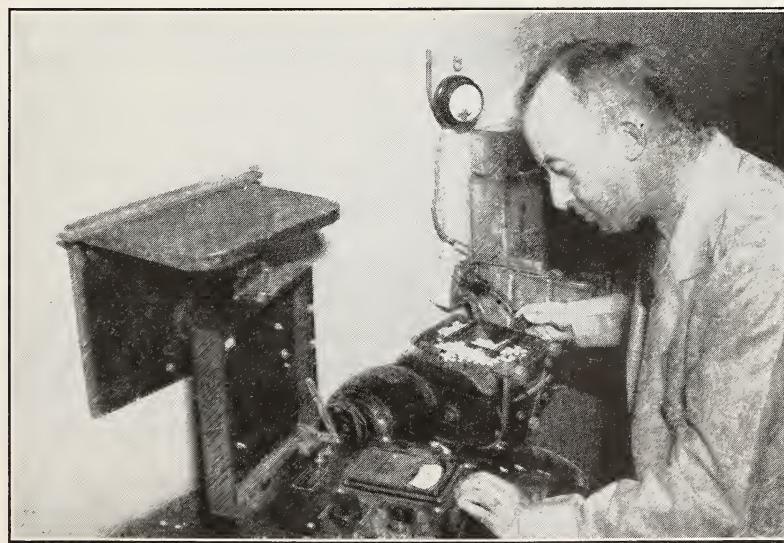
Under this act the part played by the Federal Government is supervisory. Original inspections (excepting only a very few disputes referred to the Secretary of Agriculture) are made by inspectors employed by States and grain exchanges or by inspectors operating as individuals on a fee basis (fig. 1). But all inspectors must be

licensed by the Secretary of Agriculture and licenses may be revoked for cause. Inspectors to obtain licenses must be in an unbiased status; that is, they are prohibited by the law from being in the grain business or in the employ of grain merchandisers or elevator operators. These provisions give the Federal Government a high degree of control over the entire inspection system.

For many years before the passage of the Grain Standards Act, the Department of Agriculture had been investigating grain inspection with a view to the possibility of establishing uniform standards for the important grains entering into interstate and foreign commerce. Soon after the act was passed Federal standards were established for corn, wheat, and oats. Standards are now in force for wheat, corn, barley, rye, oats, Feed Oats, Mixed Feed Oats, grain sorghums, flax-seed, and Mixed Grain.

What Determines the Grade?

Generally speaking, the principal factors that determine the commercial grade of grain are test weight per bushel, moisture content, damaged kernels, freedom from foreign materials and other grains or other classes of the same grain, and "condition"—that is, whether the grain is cool and sweet or whether it is musty, sour, heating, or hot. These are the factors of prime importance for commercial trading purposes. The determination of moisture content in grain, as illustrated in figure 2, usually is accomplished by the use of an electric



BAE 33475

Figure 2.—Determining the moisture content of grain with an electric meter.

meter that will make this test with a high degree of accuracy in less than a minute.

How Certificates Are Issued

Practically all grain received at the terminal grain markets is graded and warehoused according to the Federal grain standards. An official inspection certificate is the accepted evidence of the grade of any lot of grain.

Only two agencies issue official certificates of the grade of grain in the United States. One agency comprises the licensed grain inspectors who are authorized to certify the results of original inspections, and the other is the United States Department of Agriculture which certifies the results of appeal and dispute inspections. Any certificate issued by either of these agencies covers the grade of the grain only at the time and place of sampling. Hence, the date of the certificate and the place where the grain was located when inspected are important factors in buying and selling grain.

The official inspection certificates issued by the licensed inspectors are issued usually through State or grain-exchange inspection departments. These certificates are signed by the inspector and always bear a statement to the effect that he holds a Federal license to inspect the kind of grain covered, that he inspected it, and that the grade is as stated.

When grain is sold and shipped by grade in interstate or foreign commerce to or from a point at which official grain inspection service is maintained, official inspection is required by the Grain Standards Act.

Buyers Should Read Documents

It is always advisable for buyers, in making settlements for grain purchased by grade, to compare the invoice and contract with the official grade certificate in order to be assured that the correct grade is given on all the documents. Many grain firms attach the certificate of grade to the invoice and other documents which they send to the buyer so as to convey direct evidence of the official grade of the grain delivered. This practice is a protection to both the seller and the buyer, and tends to prevent controversy. Persons having a financial interest in any given lot of grain should make it a practice to obtain a copy of the grade certificate. A typical grade certificate issued under the jurisdiction of the United States Grain Standards Act is shown in figure 3.



STATE OF ILLINOIS

GRAIN INSPECTION CERTIFICATE
Department of Agriculture

DIVISION OF GRAIN INSPECTION

GENERAL OFFICE: 332 SO. LA SALLE ST., CHICAGO

VOID SPECIMEN COPY

Chicago, February 4, 1938.

I hereby certify that I hold a license under the United States Grain Standards Act to inspect and grade the kind of grain covered by this certificate; that on the above date I inspected and graded the following lot or parcel of grain; and that the grade thereof, according to the official grain standards of the United States, is that stated below:

Location Wabash Identification Car MP 76433Kind and Grade 2 Yellow Corn CarloadTest Weight 55.1 lbs. per bu. Moisture 17.2% Damaged 0% Foreign Mtr. 0%Remarks. Foreign Material and Cracked Corn 2.0%CERTIFICATE NO. 2991 OFFICE2991John Doe
ORIGINAL
LICENCED INSPECTOR

BAE 33836

Figure 3.—A specimen grain-inspection certificate for an "in" inspection of carlot grain.

Action in a Dispute

The act permits grain to be shipped in interstate commerce by grade without inspection between places where no official inspection is available. In such cases the grade stated is that assigned by the shipper. Should a question arise regarding the correctness of this grade, either the shipper or the receiver may ask a Federal grain supervisor to examine the grain and to assign the official grade to the lot. This is called a dispute action.

RIGHT OF APPEAL TO FEDERAL GOVERNMENT

One of the distinctive provisions of the law is the right of appeal. Either seller or buyer may take an appeal to the Secretary of Agriculture from the grade assigned to grain by a licensed inspector. This appeal is accomplished by making an application to the Federal grain supervision office in the district where the inspection was made. Appeals must be taken within 2 business days of the date of the inspection, before the grain leaves such point of inspection and before the identity of the grain has been lost. The local district supervisor, who is a representative of the Federal Department of Agriculture, then samples and examines the grain and his findings supersede the grade assigned by the licensed inspector.

In other words, the right of appeal to the Federal Government from the grades assigned by licensed inspectors exists at all times. This is the most immediate insurance against any unsatisfactory tendencies in the inspection system. Any person can obtain an appeal inspection for any lot of grain moving in interstate and foreign commerce in which he can show a money interest. An average of about 40,000 appeals is made yearly, although this represents only about 4 percent of the original inspections.

CARGO INSPECTION

On the Great Lakes for many years it has been the custom to load large lots of grain into vessels at the upper lake port, such lots of grain being inspected, graded, and certificated at the time of loading. The sampling of grain for inspection purposes during the process of loading a Great Lakes vessel is shown in figure 4. The cargo-lot certificate represents the grade of the entire quantity of grain loaded into the vessel.

Subsequently the large cargo lots of grain are discharged from the vessel at another lake port, frequently for further distribution in smaller parcels, usually carlots. The certificate of grade issued for a cargo lot does not cover smaller portions of that lot after the grain has

broken bulk and has been distributed in single carlot units. Under the provisions of the Grain Standards Act each such carlot is a new shipment and official inspection of the carlot is required when the grain is sold and shipped by grade in interstate commerce from or to an inspection point.

CARLOT INSPECTION

For inspection of carlots the grain in the car, if in bulk, is sampled with a compartment grain trier from at least five places in the car. Bulk flaxseed in carlots is sampled in seven places. If it is sacked



BAE 33476

Figure 4.—Sampling cargo grain with a "pelican" at time of loading.

grain, a sample is taken from many sacks throughout the lot. In figure 5 there is shown a grain sampler at work obtaining a representative sample of a carlot of corn with a compartment grain trier.

The sample so obtained is graded by a licensed inspector and a grade certificate is issued covering the grain contained in the car.

Carlot certificates cover "in" inspections or track arrivals at the market and "out" inspections or shipments from the market. The "in" inspection certificate is valid for "out" inspection when shipment is made within 2 days without removal of the grain from the car or any change in its identity. Thus reconsignment within 48 hours of inspection can be covered by the inbound inspection certificate.

When a Federal appeal is called from the inspector's grade, a Federal appeal grade certificate is issued. As stated heretofore, this certificate supersedes the inspection certificate issued by the



BAE 1273

Figure 5.—Taking a representative sample of carlot grain with a compartment trier.

licensee. Appeal grade certificates are valid for use under the Grain Standards Act for carlot shipments from or to an inspection point.

Certificates of examination or weight and other special forms of certificates used by the grain trade for various purposes are not official certificates of grade.

GRAIN STANDARDS IN EXPORT TRADE

United States grain in export commerce is sold largely on the basis of an inspection certificate that is final as to grade. When export grain is graded at the ports, all questions as to whether it is of the quality specified in the contract are settled when the final grade certificate is issued. Having this final certificate, the exporter can bank his papers, and the risk of arbitration with respect to the quality of the grain which he delivered is practically eliminated.

This "certificate final" system under which the transaction is closed on the basis of the grade certificate is peculiar to the United States and Canada. Under other systems of grain marketing, such as sales on the basis of "fair average quality," the question as to whether the grain shipped is of the quality stipulated in the contract is subject to arbitration. Such arbitrations occur after the grain has reached its foreign destination.

This adds the uncertainty of fulfillment of the contract to the even

greater uncertainty of indifferent specifications, such as "fair average quality." Such risk must be assumed by someone between the producer and consumer. Assuming hazards adds to the cost of marketing and imposes a toll on the grain itself, which ultimately is borne by the producer or the consumer.

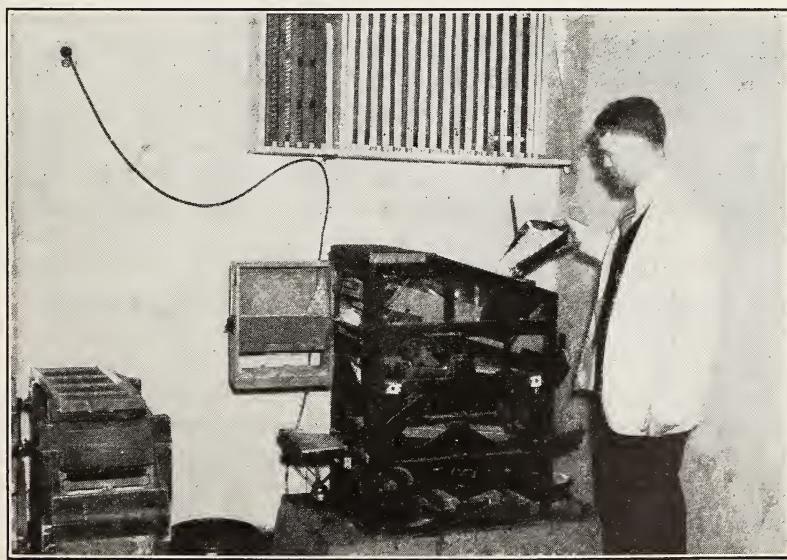
If foreign and domestic grain users are to enter into contracts for grain supplies months before they are delivered, sometimes even before the grain is sown, they must have confidence in the permanence and definiteness of the grade under which they buy.

The advantages of the American system of grain grading have become apparent to other grain-producing nations, and several of them have taken steps to introduce similar systems.

FEDERAL SUPERVISION OF GRAIN INSPECTION

The question may be asked how the Department of Agriculture maintains its supervisory work to assure uniform unbiased inspection throughout the country. This is accomplished in several ways.

District grain supervisors located in the various grain markets work with the inspectors to keep them informed concerning inspection methods and the correct interpretation and application of grading factors such as test weight, heat damage, total damage, moisture content, dockage, foreign material, and condition. Dockage and certain foreign material determinations are made with a specially designed sieving device known as the Federal dockage tester (fig. 6).



BAE 33478

Figure 6.—A grain supervisor operating a sieving device to determine dockage in wheat.

The local supervisors obtain samples of grain moving in interstate commerce for the purpose of determining whether the inspections have been properly made. About 200,000 such samples, including the appeal samples, are taken and reviewed each year. By a proper distribution of such samples between receipts and shipments at any market, and by giving attention to movements of certain classes of grain, a comprehensive coverage of all inspections is obtained. Representative samples which indicate inspection performance throughout the United States are submitted to boards of grain supervisors for reviewing.

Supervisory officers are located at some 45 markets. There are about 100 additional points at which licensed inspectors have established inspection offices and regularly perform inspection service. These inspectors are kept conversant with official methods and interpretations largely through samples that they send to their local district supervisors.

Records of most intermarket movements of grain are obtained. The supervisor for the district or market from which the grain is shipped prepares a small form showing how the grain was graded at the shipping point. This shipping-point information is forwarded to the supervisor at the destination market and usually reaches him before the grain arrives.

The supervisor at the receiving end obtains a report of the inspection of the grain in his market. If the grades assigned at shipping point and at the receiving market are different, the destination supervisor investigates, frequently taking official samples. This information and the samples are sent to Federal administrative officers and to the shipping-point supervisor. This procedure enables the administrative officers and the supervisors to detect any misgrading tendencies in the inspections at once and to correct them before they become serious problems or before serious trade losses result. These checks also tend to make inspectors more careful in the performance of their duties.

BENEFITS OF UNIFORM GRAIN STANDARDS

A grading system based on uniform standards and supervised by the Federal Government affords expert, unbiased inspection service. Federal grain standards have definite, easily understood specifications. They furnish a common language which is understood by widely separated merchandisers who cannot examine the grain or samples. Grain of dependable quality is as essential to commercial good will and confidence as dependable merchandise is to successful advertising.

The fact that the grades are definite and are uniformly applied

means that the buyer can be assured of receiving a standard quality represented by the grade. Furthermore, there is little opportunity for the buyer to take advantage of the shipper, or vice versa, in cases where either party has only a limited knowledge of grain quality.

Standards foster confidence and good will all along the channels of trade. They facilitate the reflection of premium prices for grain of superior quality.

Grading enables producers of superior grain to get prices commensurate with superior quality through the exclusion of inferior grain from the high grades. It puts the grower of high-quality grain in position to demand the premium to which he is entitled.

Where grain is systematically and promptly graded every morning on receiving tracks, information on quality is provided which makes it possible for competitive bidding to get under way without delay. This not only permits shippers to realize maximum prices but by expediting the movement into commercial channels it reduces the costs of handling, switching, and demurrage. Dependable standards and inspection promote sales f. o. b. and in transit.

The shipper who has knowledge of the grade of the grain that he ships is in a much better position to handle claims for losses in case of lawsuits or arbitrations. The price of grain, of a definite grade, on any given day is relatively easy to ascertain, and when the evidence is presented to show that the shipment was of a certain grade the amount of loss is quickly computed. A shipper who does not have this evidence of quality is without a most valuable aid when he tries to obtain a fair adjustment.

Uniform grading is essential to satisfactory market reports if a comparison of prices at different markets is to be made. This has become very important as the Nation-wide system of market reporting that has been developed is being more and more widely relied upon by farmers and buyers.

Price quotations at competitive markets, based on uniform grades, permit shippers to forward grain to the market that is in position, at any given time, to pay the best price for the grain. It facilitates the marketing of grain at minimum cost. On the other hand, the absence of uniform grades and inspection causes market quotations by grade to be wholly unreliable, thus making it difficult for shippers to obtain the maximum price for grain of a given quality in competitive markets.

Standards discourage the shipment of inferior grain to consuming centers, thus eliminating freight and other charges on products that can make but very low financial returns. Graded products are far better adapted than ungraded ones for holding in storage under modern conditions.

Grading based on definite standards is the only thing that makes possible the bulk handling and storage of fungible grain in public

warehouses and elevators with assurance that the quality of the grain delivered will not be lower than that called for in the warehouse receipt.

Accurate official grading enables shippers and holders of warehouse receipts to obtain credit on their commercial paper in sums representing a high percentage of the full market value of the grain.

Uniform grades and inspection are essential to futures trading and hedging operations. Futures contracts for grain in the contract markets of the United States specify quality in terms of the Federal standards.

Efficient large-scale grain marketing, as was conducted by the United States Grain Corporation during the World War, is mainly dependent on uniform standards and unbiased inspection.

Grading reduces risks; consequently both foreign and domestic buyers will pay more for grain bought months in advance, for future delivery, when they know that the grain delivered will be of a definite quality according to grade.

The honest and reliable grain dealers in the large markets are directly benefited by a uniform system of grading which prevents undesirable competition arising from the manipulation of grades by unscrupulous dealers and mixers.

GRAIN STANDARDS ACT BASIC TO MODERN GRAIN COMMERCE

The situation that existed before 1916 in both the domestic and foreign grain trade was chaotic as a result of nonuniform standards and inspection. Grades and certificates often were used to manipulate prices; but the advent of control and unbiased inspection stopped this whipsawing of sellers and buyers. Country prices today reflect terminal prices and consumers' demands much more closely than they did before the Grain Standards Act was passed.

The grain standards law is absolutely basic to the grain trade as it exists now. It provides the basis for settlement on country shipments and on shipments between terminal markets; and for warehouse certificates, bank loans, and exports by grade, and it is the foundation for futures trading.

Under these modern conditions the farmers, country shippers, and others are protected against grade variations arising out of non-uniform standards and biased or inaccurate application of the standards. The right of appeal to the Secretary of Agriculture provides for the correcting of occasional errors in sampling or inspection.

The system has become the basis for price quotations at country shipping points which receive quotations by grades daily from the terminal markets. Price quotations by grade are sent out regularly

by the United States Department of Agriculture and commercial interests through radio, telegraph, and mail. The grades in the Federal standards describe grain qualities at country points in the same terms as those used for settlement basis at terminals. Market quotations by grades are posted at frequent intervals during the day at most country shipping points. These indicate the price variations in different markets brought about by the current demands of processors, elevator operators, exporters, and other grain handlers or users. From such quotations a farmer can make his choice of the market to which he had best ship at any time, making allowances only for freight rates and commercial charges which are now the only variables. Grades are uniform in all markets.

The Grain Standards Act affords grading protection in the case of grain shipped on consignment. The farmer is assured that the grading will be unbiased and that the grade on his consigned grain will be determined fairly.

It has brought tremendous improvement in the export trade situation. The "certificate final" system, whereby grain is cleared from American ports under final agreement on certificate, has had a very favorable effect on country prices. With the hazard of uncertain quality removed, foreign buyers are able to pay closer to the American scale than they otherwise would pay.

"SAMPLE INSPECTIONS" FOR GRAIN GROWERS

An interesting development under this act is the use of so-called "sample inspections" by farmers, country shippers, and grain buyers, to determine the grade before making sales or purchases. In the case where a grower has a lot of grain which he is likely to sell to track buyers or to an interior mill or to an elevator operator, the grower may send a representative sample of his own grain to the nearest licensed inspector and get a report on its grade, as well as on its quality according to such important factors as moisture content and test weight per bushel. He is then in position to act in the light of the current market quotations, knowing about what his grain should bring in the available markets.

This sample inspection service has had a big development in the Pacific Northwest. Wheat growers and buyers in Washington and Oregon are using this service widely. Most of the sampling is done by a cooperative sampling agency. About 24,000 samples are inspected each year, and the service is expanding. Growers in other important wheat areas, especially in the soft red winter and hard red winter areas, might with profit make more use of the "sample inspection" service, especially in connection with farm-stored grain.

INSPECTION INDICATES REMEDIABLE DEFECTS IN GRAIN

Often these sample inspections reveal minor flaws in quality. Perhaps only one factor of quality is involved, and it can be remedied before the grain is loaded and shipped, thus avoiding unnecessary discounts. Such things as excess foreign material, mixtures with other grains that are separable, excess moisture, and similar defects can be corrected, and often with resulting advantage in price. The laboratory analysis of a grain sample according to the several grade factors of quality is shown in figure 7.



BAE 33477

Figure 7.—Analyzing a grain sample in the laboratory to determine its grade.

It frequently happens also that this grade information on grain indicates mixtures or diseases such as smut in wheat or blight in barley which cause material discounts at terminal markets, but which farmers can remedy through the adoption of recommended varieties, pure seed, disease control, crop rotation, and other farm-management practices.

The Bureau of Agricultural Economics gathers data about shipping points from which a high percentage of grain containing dockage or otherwise of low grade from one cause or another is shipped to market. This information is revealed to extension men and becomes the basis for educational programs leading to correction of these defects. Of course the key to all improvement work of this kind is the knowledge gained through the inspections.

Certain areas in the Southwestern States, for example, grow and ship considerable quantities of hard red winter wheat with excess rye mixed in it. Such wheat is given a low grade and is subject to price discounts. Discounts of this nature may be avoided by the use of pure seed and by the adoption of desirable cultural practices. In the case of malting barley in the Corn Belt States, mixtures of varieties, the shipment of wrong varieties, and too close threshing resulting in skinned or broken kernels, often occur. Any of these factors may prevent barley from grading as Malting Barley and from sale at premium prices. Market losses from such causes can be remedied by good farm-management practices.

Wheat produced in the soft red winter wheat area is often degraded and discounted because of high content of garlic bulblets, although the losses from this cause can be reduced by the proper control methods on the farm. Many wheat growers suffer losses from the marketing of smutty wheat that is objectionable to millers, although smut can be controlled on the farm by seed treatment. The Bureau of Agricultural Economics assisted in the devising of a portable seed-cleaning and treating machine which is used extensively in several wheat-growing States to improve the quality of seed.

INDIRECT BENEFITS OF ACT TO GRAIN PRODUCERS

Finally it may be reemphasized that the greatest benefits to grain producers from this modern system of uniform grain standards are indirect. Efficient grain inspection underlies the whole system of long-distance trading both as to space and time. It is the basis for future commitments in all branches of the grain industry—one of the Nation's most important industries. It is the farmer's first insurance against the hazards and abuses that formerly existed in the channels of grain commerce and which bore down heavily upon prices at country points.

The United States Department of Agriculture in its administration of the Grain Standards Act has endeavored to set up standards that accurately designate the qualities of grain in fairness to both producers and consumers; to establish a system of supervision which insures fair, uniform, and intelligent grading at all times; and to round out its administrative program with research and educational activities calculated to improve the quality and thereby the price of the grain grown in the United States.

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U. S. GOVERNMENT PRINTING OFFICE: 1938

For sale by the Superintendent of Documents, Washington, D. C. - - - - - Price 5 cents

